What is claimed is:

1. An apparatus for handling a workpiece during semiconductor processing, comprising:

a wafer platen including a plurality of channels each extending from a top surface to a bottom surface of the wafer platen;

a plurality of lift pins in alignment with the channels; and

a mechanism for engaging the lift pins in a loading position of the workpiece, a clamping position for placing the workpiece in a position so that desired semiconductor processes may be performed to the workpiece, and a lift off position for removing the workpiece from the wafer platen after the desired semiconductor processes are completed.

2. An apparatus for handling a workpiece as defined in claim 1, wherein the mechanism places the lift pins below the surface of the wafer platen in the load position.

3. An apparatus for handling a workpiece as defined in claim 1, wherein the mechanism places the lift pins at a first predetermined distance above the surface of the wafer platen in the clamp position, the first predetermined distance allowing the workpiece to be clamped to the wafer platen.

4. An apparatus for handling a workpiece as defined in claim 1, wherein the mechanism places the lift pins at a second predetermined distance above the surface of the wafer platen in the lift off position, the second predetermined distance allowing a workpiece removing device to be positioned between the workpiece and the wafer platen without contacting either surface.

5. An apparatus for handling a workpiece as defined in claim 4, wherein the workpiece removing device comprises a robotic arm.

6. An apparatus for handling a workpiece as defined in claim 1, wherein the mechanism comprises first and second cylinders for engaging the lift pins in the load, clamp and lift off positions.

7. An apparatus for handling a workpiece as defined in claim 1, wherein the plurality of lift pins comprise three lift pins.

8. An apparatus for handling a workpiece as defined in claim 7, wherein the three lift pins are arranged in a triangular manner to stably support the workpiece.

9. An apparatus for handling a workpiece as defined in claim 1, wherein the plurality of lift pins comprise more than three lift pins.

10. An apparatus for handling a workpiece as defined in claim 1, wherein the lift pins comprise pointed tips.

11. An apparatus for handling a workpiece as defined in claim 1, wherein the lift pins comprise flattened tips.

12. An apparatus for handling a workpiece as defined in claim 1, wherein the lift pins comprise tungsten, aluminum, carbide, aluminum, nitride, graphite or titanium.

13. An apparatus for handling a workpiece as defined in claim 1, wherein the wafer platen comprises aluminum or ceramic materials.

14. An apparatus for handling a workpiece as defined in claim 1, further comprising a gas cooling controller for cooling a backside chamber between the workpiece and the wafer platen.

15. An apparatus for handling a workpiece as defined in claim 14, wherein the gas cooling controller comprises a gas source for supplying gas to the backside chamber, a pressure controller for regulating the pressure of the gas supplied to the backside chamber, an exhaust pump for exhausting gas from the backside chamber and a switch for switching between supplying gas and exhausting gas through a gas feed through in the wafer platen.

16. An apparatus for handling a workpiece as defined in claim 1, further comprising a plurality of electrical contacts on the top surface of the wafer platen.

17. An apparatus for handling a workpiece as defined in claim 1, further comprising a bias source for supplying a bias voltage to the lift pins.

18. An apparatus for handling a workpiece as defined in claim 16, further comprising a bias source for supplying a bias voltage to the lift pins and the electrical contacts.

19. A method for handling a workpiece during semiconductor processing, comprising the steps of:

loading the workpiece on a wafer platen;

engaging lift pins through channels of the wafer platen above the surface of the wafer platen for positioning the workpiece in a clamping position; and

engaging the lift pins through the channels of the wafer platen to further lift the workpiece above the surface of the wafer platen for positioning the workpiece in a lift off position.

20. A method for handling a workpiece as defined in claim 1, wherein the lift pins are placed below the surface of the wafer platen during the step of loading, the lift pins are engaged at a first predetermined distance above the surface of the wafer platen in the clamping position with the first predetermined distance allowing the workpiece to be clamped to the wafer platen, and the lift pins are engaged at a second predetermined distance above the surface of the wafer platen in the lift off position with the second predetermined distance allowing a workpiece removing device to be positioned between the workpiece and the wafer platen without contacting either surface.